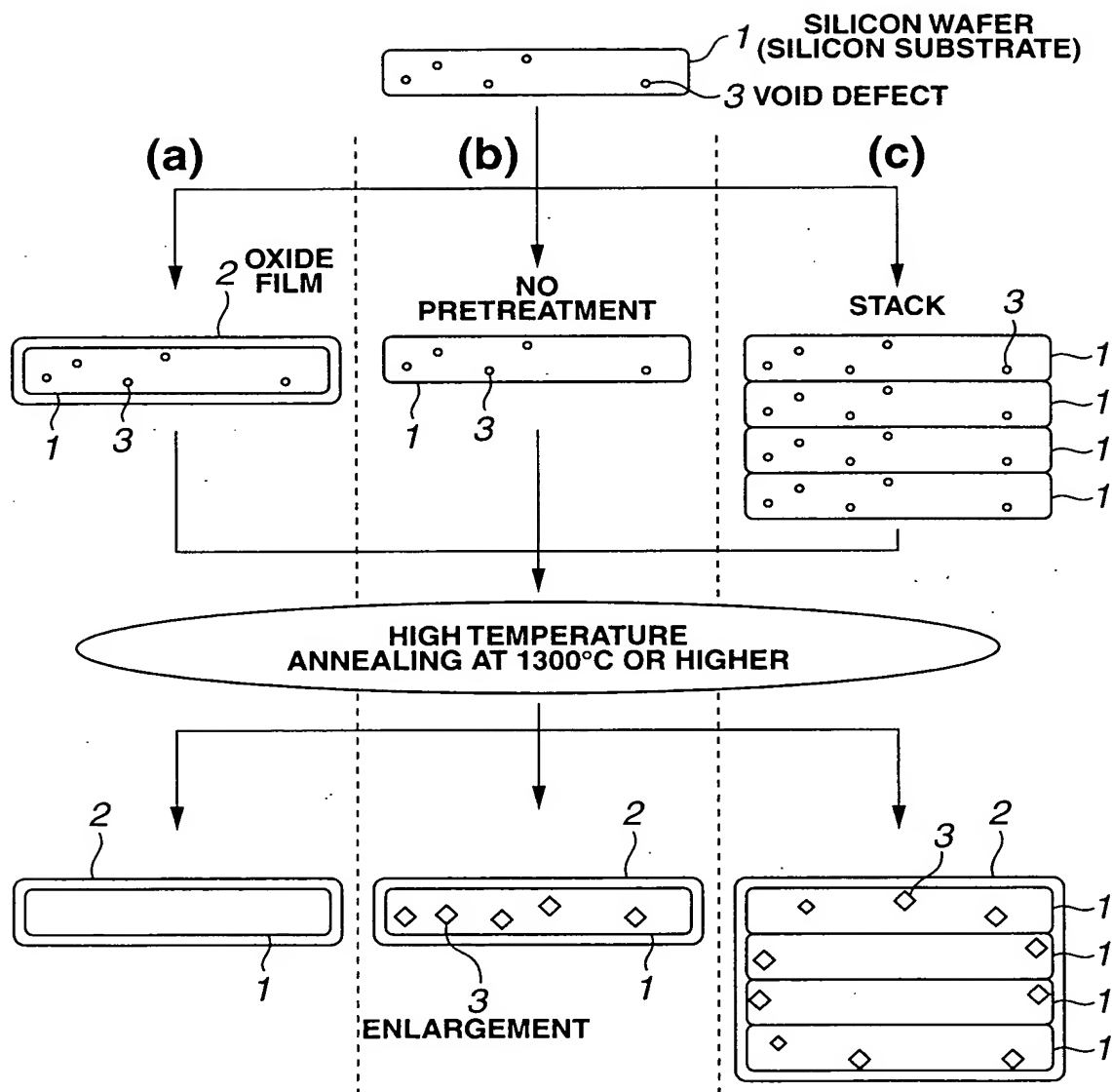


FIG.1



**FIG.2**

TREATMENT TEMPERATURE /TIME	OXYGEN PARTIAL PRESSURE IN ARGON GAS		
	0.5%	30%	100%
1300°C, 2 HOURS	×	×	
1350°C, 2 HOURS	×	×	×
1390°C, 2 HOURS	×	×	×

×: ENLARGEMENT  
 △: SHRINKAGE  
 ○: DISAPPEARANCE

**FIG.3**

TREATMENT TEMPERATURE /TIME	OXYGEN PARTIAL PRESSURE IN ARGON GAS		
	0.5%	30%	100%
1300°C, 2 HOURS	○	△	△
1350°C, 2 HOURS	○	○	○
1390°C, 2 HOURS	○	○	○

×: ENLARGEMENT  
 △: SHRINKAGE  
 ○: DISAPPEARANCE

FIG.4

TREATMENT TEMPERATURE /TIME	ATMOSPHERE	INITIAL OXIDE FILM THICKNESS (nm)					
		0*	45 nm	175 nm	396 nm	500 nm	700 nm
1350°C, 2 HOURS	0.5% O <sub>2</sub> /Ar	X	X	X	△	○	○
1350°C, 2 HOURS	30% O <sub>2</sub> /Ar	X	X	X	X	○	○
1350°C, 2 HOURS	100% O <sub>2</sub>	X	X	X	X	○	○

\*: NATURAL OXIDE FILM

X: ENLARGEMENT

△: SHRINKAGE

○: DISAPPEARANCE

**FIG.5**

OXIDE FILM THICKNESS	OXIDE FILM FORMATION METHOD	VOID DEFECTS
440	CVD	△
720	CVD	△
55	DRY OXIDATION	×
164	DRY OXIDATION	×
274	DRY OXIDATION	×
400	DRY OXIDATION	○
840	DRY OXIDATION	○
75	WET OXIDATION	×
159	WET OXIDATION	×
377	WET OXIDATION	×
720	WET OXIDATION	○

×: ENLARGEMENT

△: SHRINKAGE

○: DISAPPEARANCE

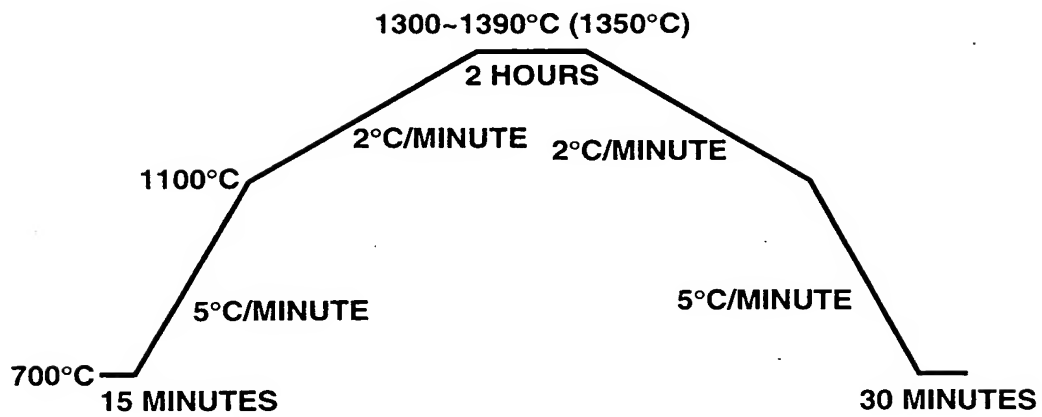
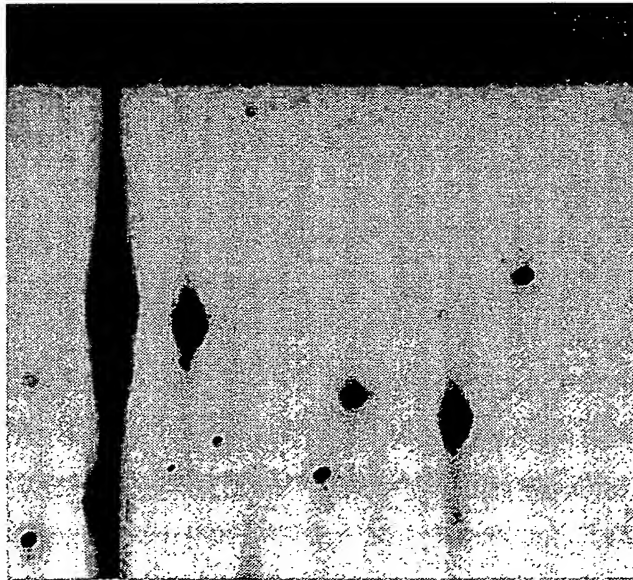
**FIG.6**

TREATMENT TEMPERATURE /TIME	OXYGEN PARTIAL PRESSURE		
	VOID DEFECTS		
1200°C, 2 HOURS	NO CHANGE		
1240°C, 2 HOURS	○		
1260°C, 2 HOURS	○		
1280°C, 2 HOURS	○		
1300°C, 2 HOURS	○		
1310°C, 2 HOURS	×		
1320°C, 2 HOURS	×		
1350°C, 2 HOURS	×		
1390°C, 2 HOURS	×		

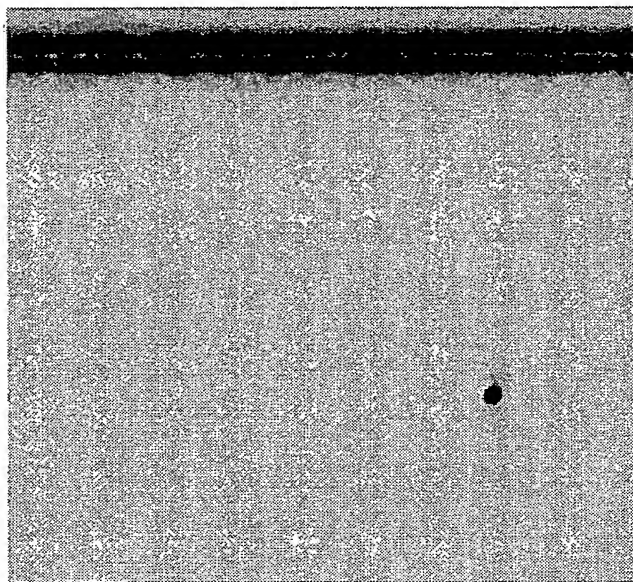
×: ENLARGEMENT

△: SHRINKAGE

○: DISAPPEARANCE

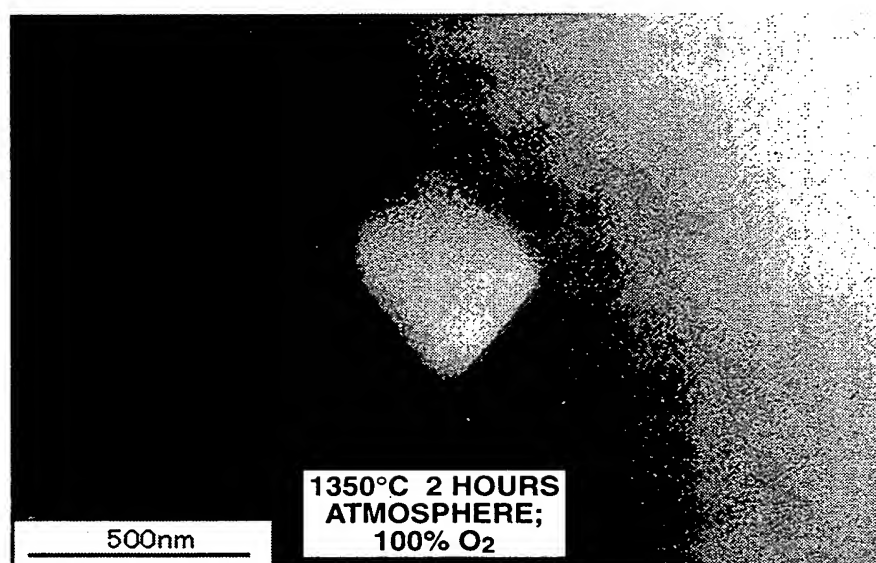
**FIG.7****FIG.8**

**FIG.9**



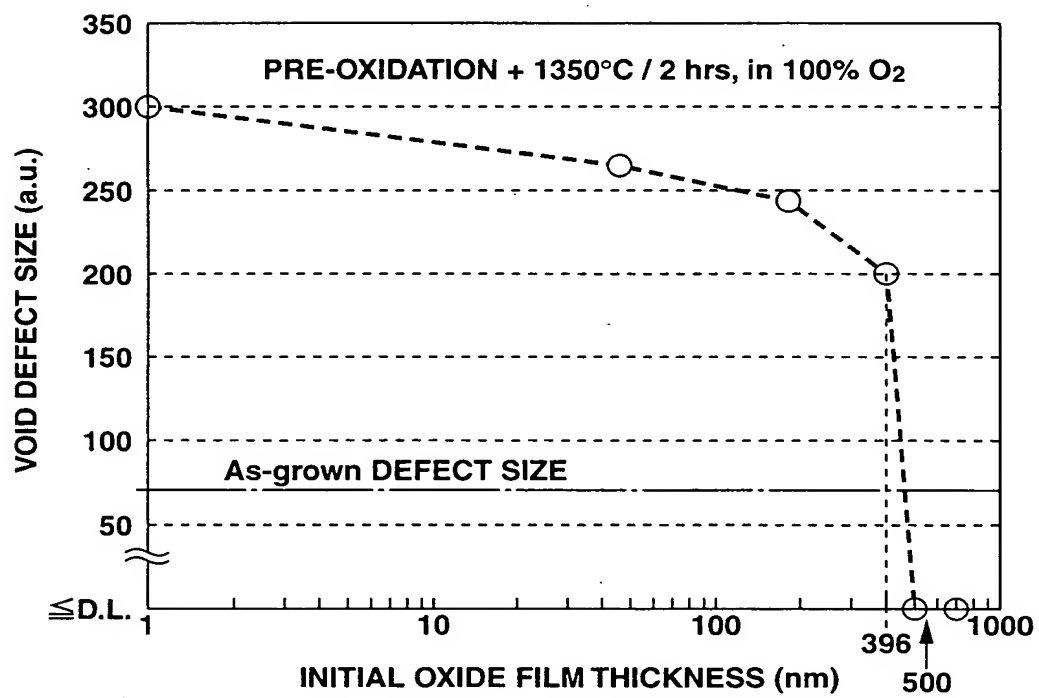
**BEST AVAILABLE COPY**

**FIG.10**



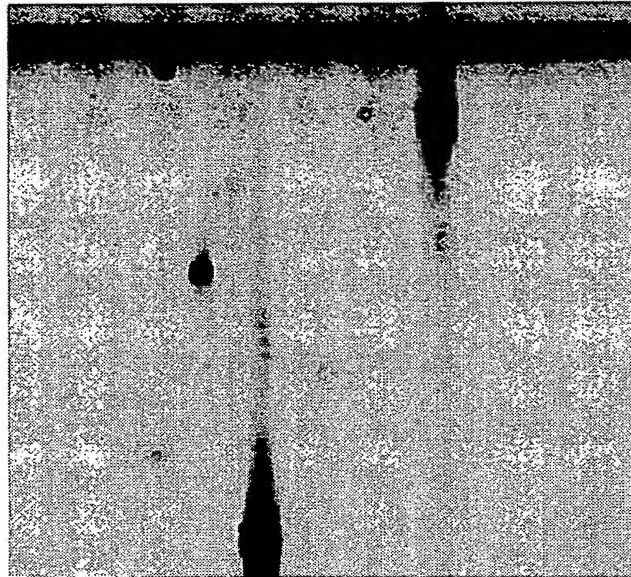
**BEST AVAILABLE COPY**

FIG.11





**FIG.12**



**FIG.13**

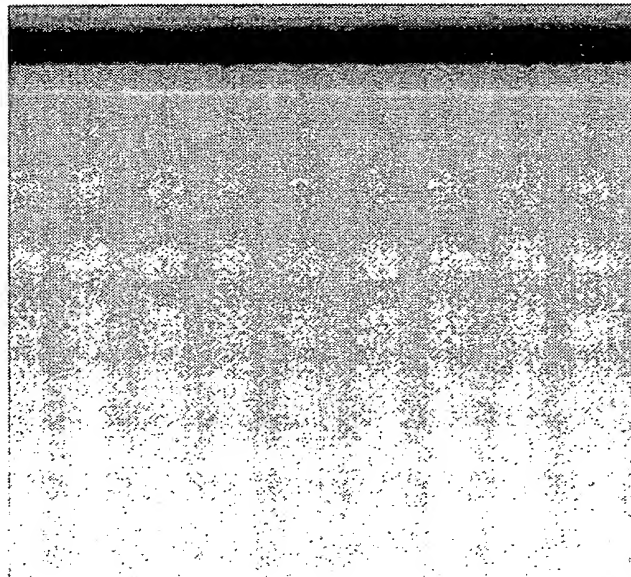


FIG.14

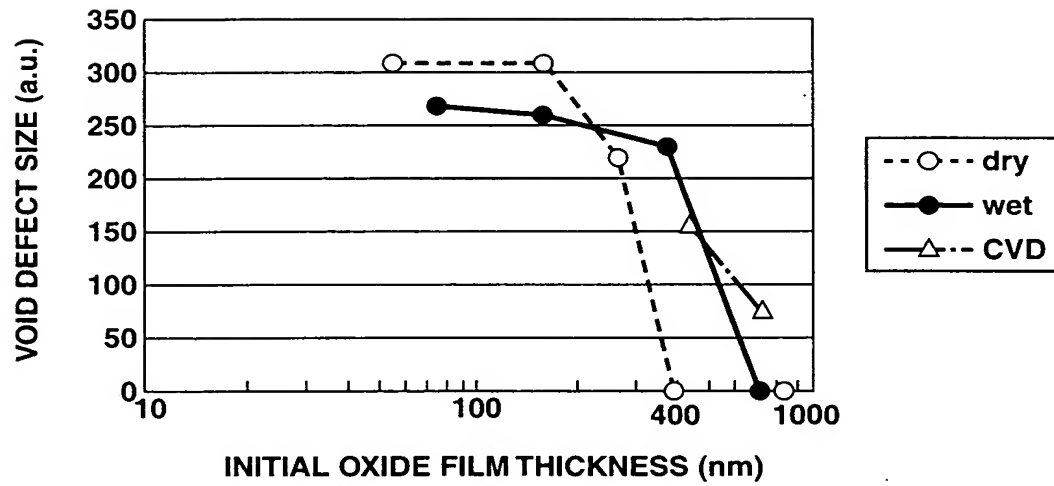


FIG.15

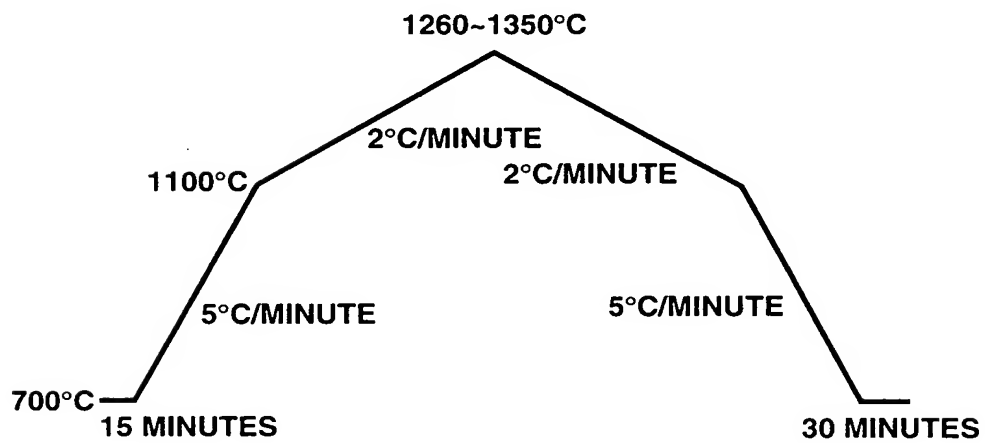


FIG.16

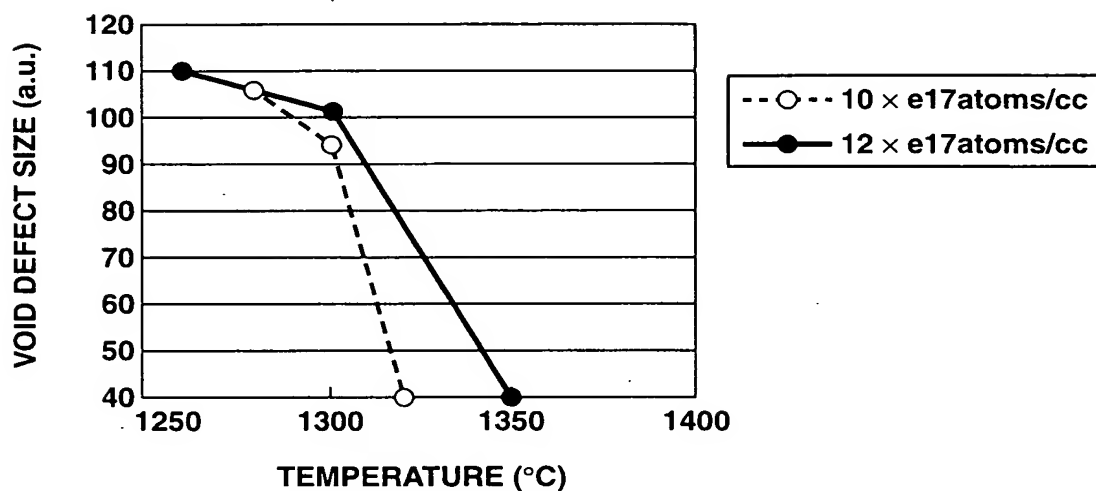
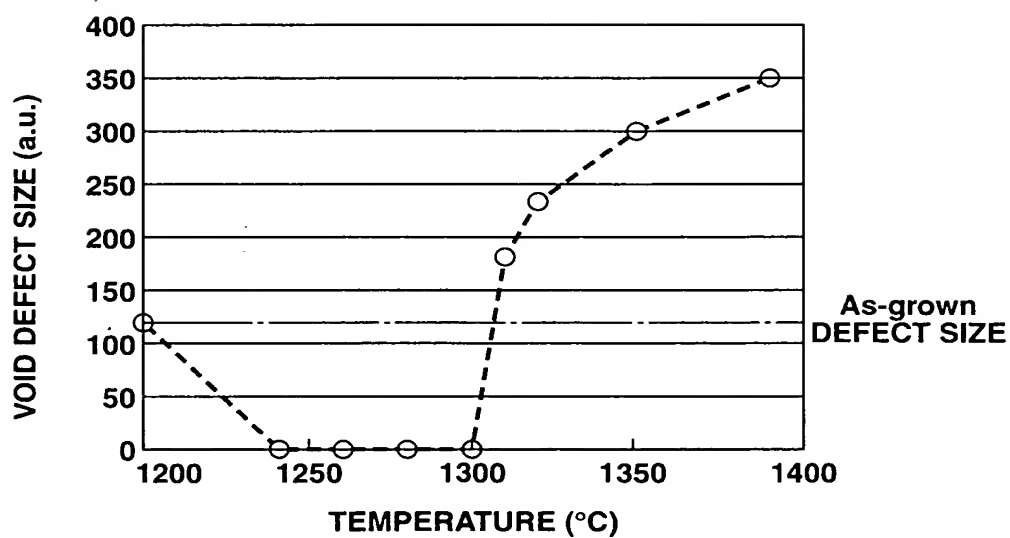


FIG.17



**FIG.18**

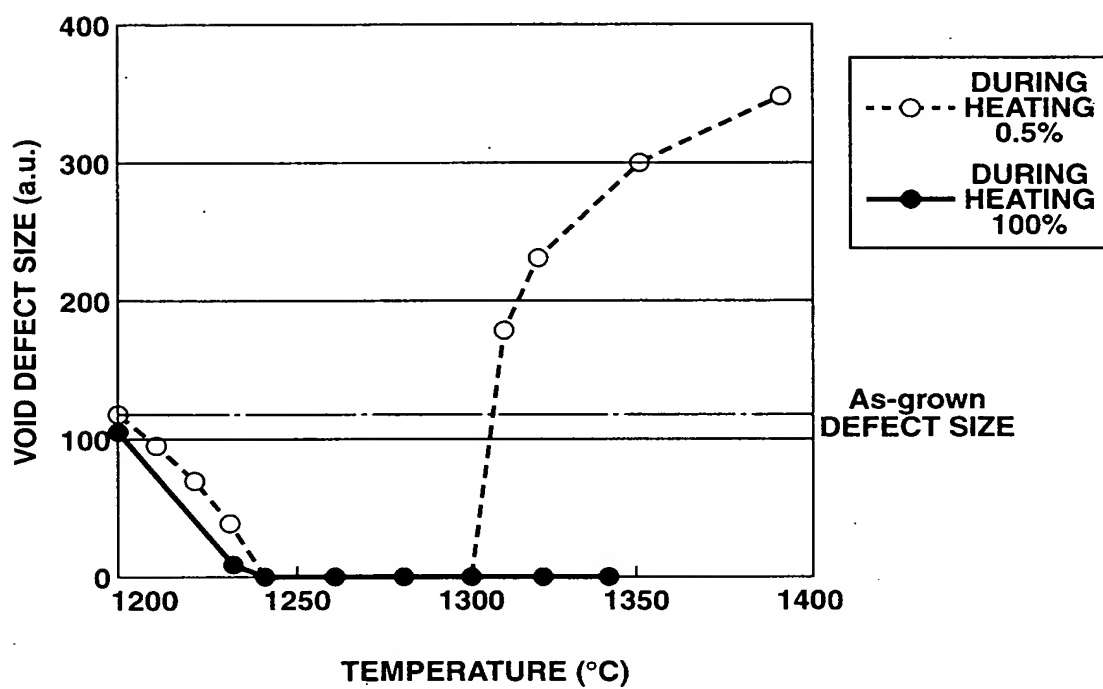
TEMPERATURE	INITIAL OXYGEN CONCENTRATION			
	10e17 (atoms/cc)		15e17 (atoms/cc)	
	ATMOSPHERE DURING HEATING		ATMOSPHERE DURING HEATING	
	0.5%	100%	0.5%	100%
1200°C	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE
1210°C	△	△	NO CHANGE	NO CHANGE
1220°C	△	△	NO CHANGE	NO CHANGE
1230°C	△	○	NO CHANGE	NO CHANGE
1240°C	○	○	NO CHANGE	NO CHANGE
1260°C	○	○	NO CHANGE	NO CHANGE
1280°C	○	○	NO CHANGE	NO CHANGE
1300°C	○	○	×	△
1310°C	×	○	×	○
1320°C	×	○	×	○
1330°C	×	○	×	○
1340°C	×	○	×	○
1350°C	×	○	×	○

×: ENLARGEMENT  
 △: SHRINKAGE  
 ○: DISAPPEARANCE

FIG.19

TEMPERATURE	OXYGEN ATMOSPHERE DURING HEAT TREATMENT (INCLUDING HEATING)									
	INITIAL OXYGEN CONCENTRATION: 10e17 atoms/cc				INITIAL OXYGEN CONCENTRATION: 15e17 atoms/cc					
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%
1260°C	○	○	○	○	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE
1280°C	○	○	○	○	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE
1300°C	○	○	○	○	NO CHANGE	△	△	△	△	△
1320°C	○	○	○	○	X	△	△	△	△	△
1340°C	○	○	○	○	X	△	△	△	△	△
1350°C	○	○	○	○	X	△	△	△	△	△

FIG.20



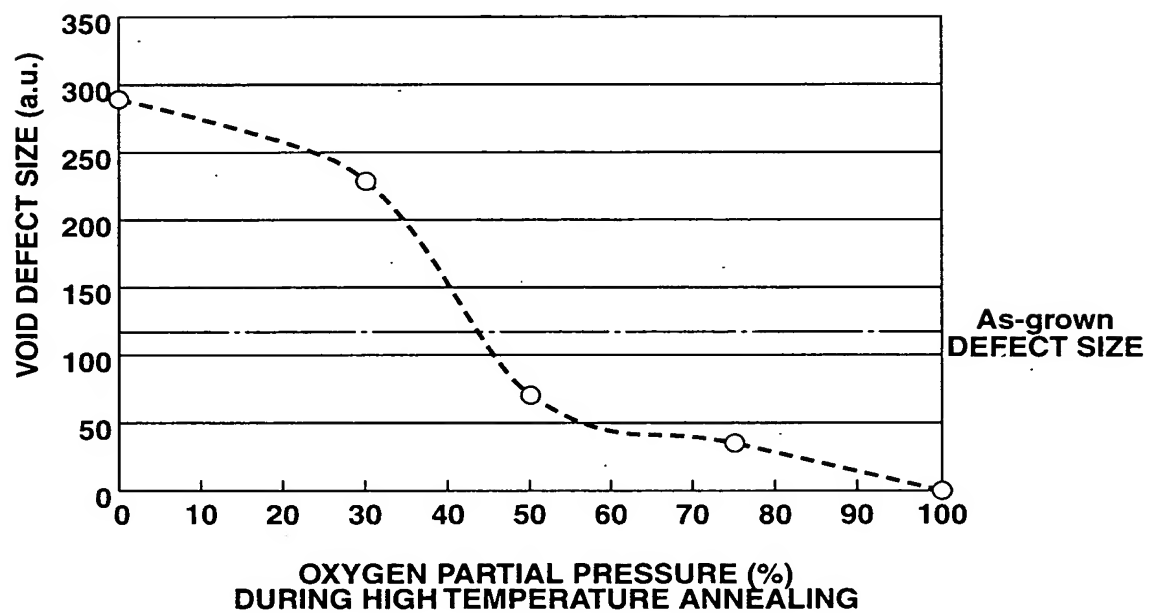
**FIG.21**

FIG.22

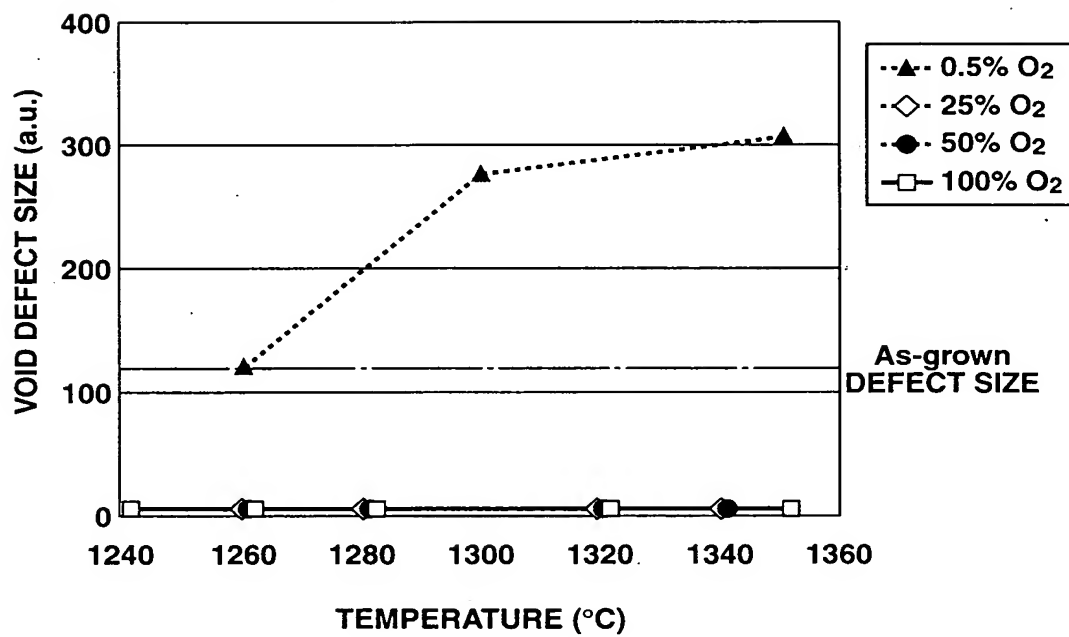




FIG.23

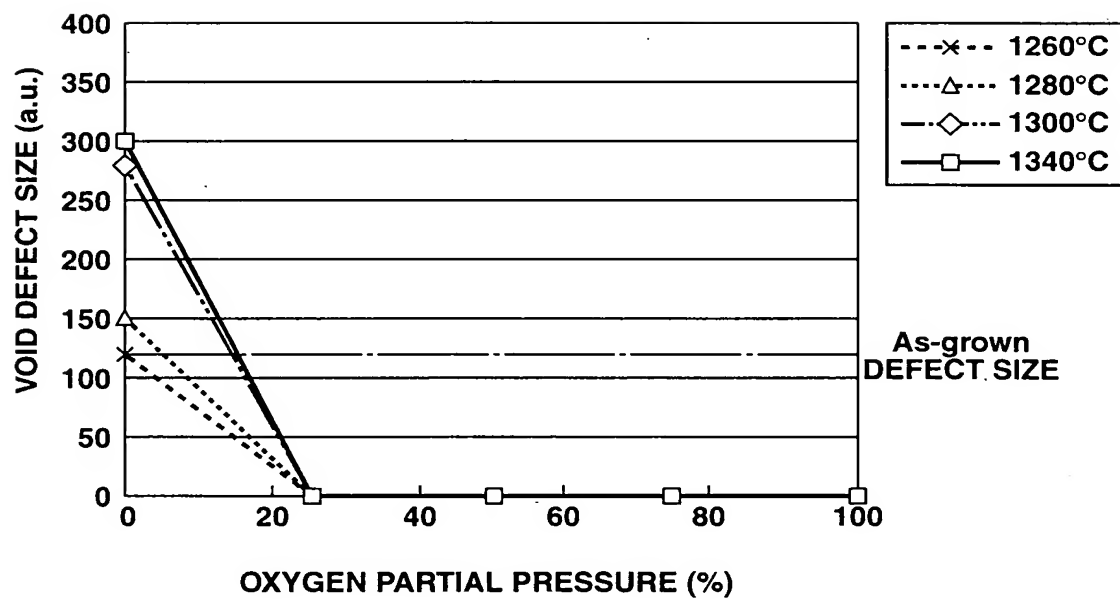


FIG.24

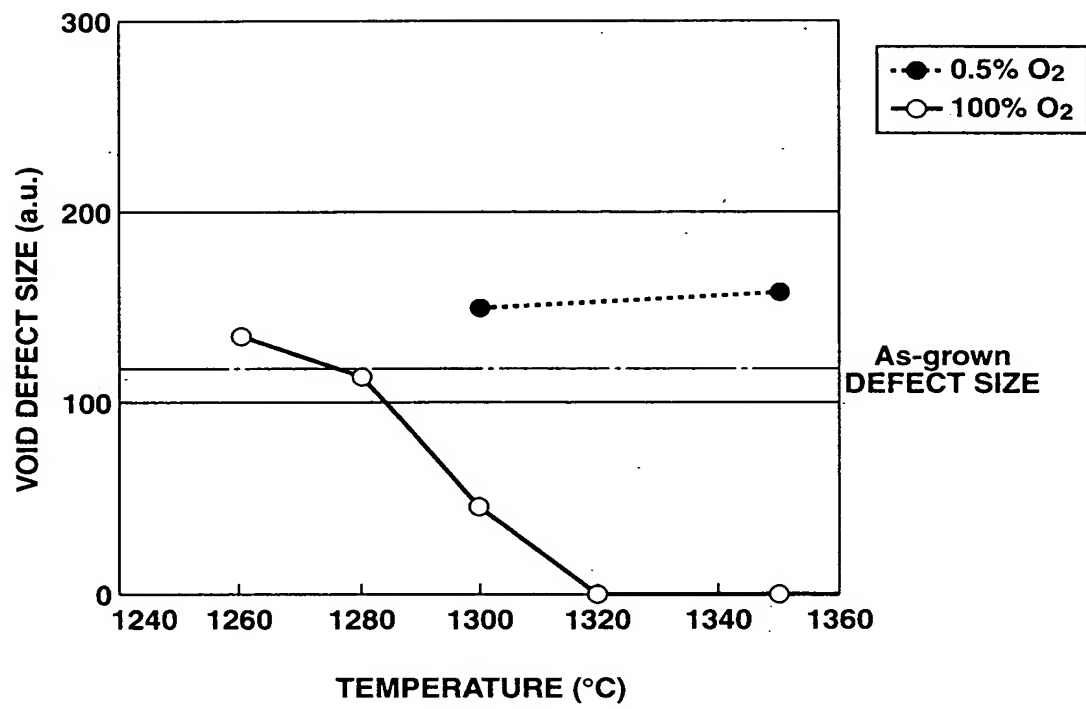


FIG.25

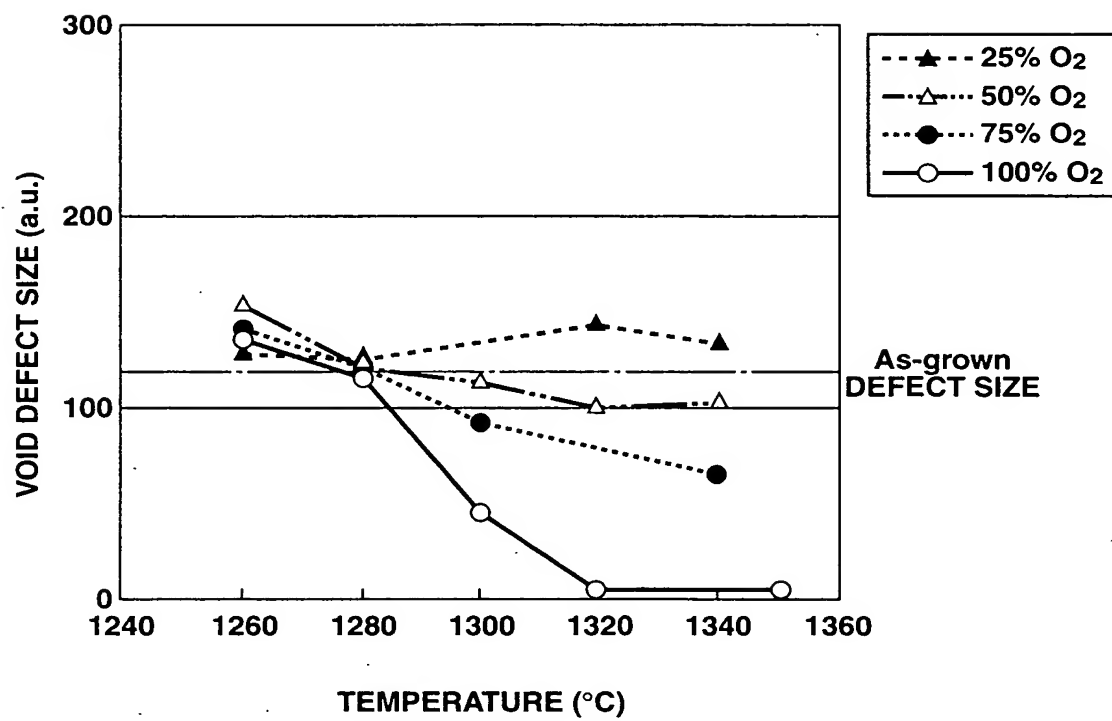


FIG.26

